

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Application No. : 10/648,445  
Applicants: : Heather N. Bean, et al.  
Filed: : August 27, 2003  
TC/A.U. : 2622  
Examiner: : Usman A. Khan  
Title : ADAPTIVELY READING ONE OR MORE BUT FEWER THAN ALL  
PIXELS OF IMAGE SENSOR

**APPELLANT'S REPLY BRIEF**  
**TO EXAMINER'S ANSWER DATED MARCH 3, 2010**

MS APPEAL BRIEF-PATENTS  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir or Madame:

This Reply Brief, in compliance with 37 C.F.R. § 41.41, is in response to the Examiner's Answer dated March 3, 2010 and in furtherance of the Notice of Appeal filed under 37 C.F.R. § 41.31 on October 1, 2009.

The Examiner's Grounds for Rejection are substantially the same as those presented in the Final Office Action dated July 1, 2009. Appellant has addressed these rejections in their Appeal Brief dated December 1, 2009. In the Examiner's Answer dated March 3, 2010 the Examiner provides a response to the arguments presented in the Appeal Brief. Appellant respectfully traverses the assertions and conclusions provided in the Examiner's Answer. The following is the Appellant's Reply Brief, which supplements, but does not replace, Appellant's Appeal Brief. Unless otherwise indicated, citations provided herein by page and line number refer to Appellant's specification.

This brief contains items under the following headings as required by 37 C.F.R. § 41.41 and MPEP 1208 (headings enumerated so as to correspond to the Appeal Brief headings):

III. Status of Claims

VI. Grounds of Rejection to be Reviewed on Appeal

VII. Argument

The last page of this brief bears the attorney's signature.

### **III. STATUS OF CLAIMS**

- A. Total Claims: 1-28
- B. Current Status of Claims:
  - 1. Claims canceled: none
  - 2. Claims withdrawn: none
  - 3. Claims pending: 1-28
  - 4. Claims allowed: none
  - 5. Claims rejected: 1-28
  - 6. Claims objected to: none
- C. Claims on Appeal: 1-28

## **VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

The following grounds of rejection are to be reviewed on appeal:

A. Claims 1, 2, 12, 13, 24, 25, 27, and 28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lee et al. (U.S. Publication No. 2003/0193593) in view of Vernier (U.S. Publication No 2004/0036778).

B. Claims 3 -9, 14-20, 23, and 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lee et al. (U.S. Publication No. 2003/0193593) in view of Vernier (U.S. Publication No 2004/0036778) and further in view of Yoneyama (JP 04313949).

C. Claims 10 and 11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lee et al. (U.S. Publication No. 2003/0193593) in view of Vernier (U.S. Publication No 2004/0036778) and further in view of Horie et al (U.S. Patent No. 6,480,624).

D. Claims 21 and 22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lee et al. (U.S. Publication No. 2003/0193593) in view of Vernier (U.S. Publication No 2004/0036778) in view of Yoneyama (JP 04313949) and further in view of Horie et al (U.S. Patent No. 6,480,624).

## **VII. ARGUMENT**

### **A. Response to arguments in Examiner's Answer mailed March 3, 2010 regarding the rejections under 35 USC § 103 of claims 1, 2, 12, 13, 24, 25, 27, and 28 in view of the Lee and Vernier references.**

The Examiner's response to the arguments presented in Appellant's Appeal Brief are substantially set forth at pages 27-28 of the Examiner's Answer mailed March 3, 2010. Appellant respectfully submits the following remarks in response to the arguments presented in the Examiner's Answer.

#### **1. Independent claim 1 is not obvious in view of the Lee and Vernier references.**

From Appellant's review, the Lee reference is directed to an X-Y addressable active pixel sensor, using shift registers in each of the X and Y directions to provide the capability for selectively addressing imaging sub-windows. As acknowledged in the final Office action, mailed July 1, 2009, and re-iterated at page 4 of the Examiner's Answer mailed March 3, 2010, the Lee reference fails to disclose organizing the entire set of pixels into dynamic and static partitions, each partition having multiple pixels; mapping one or more of the partitions to one or more of the member-pixels of the subset, respectively and reading the static portions once and the dynamic portions multiple times and processing extra partition-read requests for creating a series of images corresponding in time to more frequently read partitions. Therefore, the final Office action looks to the Vernier reference for such teachings. However, the Vernier reference is directed to a slit camera system for generating artistic images of moving objects. According to the Vernier reference, an artistic image is a distorted image (Vernier Para. [0022]). That is, the Vernier reference describes warping the output image to produce different artistic effects (Vernier Para. [0024]).

#### **a. The Lee and Vernier references do not teach or suggest the claimed limitation of "organizing the entire set of pixels into dynamic and static partitions, each partition having multiple pixels."**

Independent claim 1 is directed to a method for selectively reading less than all information available at an output of an image sensor for which member-pixels

of a subset of an entire set of pixels are individually addressable. Therefore, Appellant respectfully submits that claim limitations involving the claimed element of “the entire set of pixels” necessarily refers to pixels of the image sensor.

Page 27-28 of the Examiner’s Answer suggests that Figures 3-5 at items 310 and 320 teach the dynamic and static partitions. However, Figures 3-5 at items 310 and 320 refer to a dynamic portion 310 and a static portion 320 of an intended output image, not reading pixels of an image sensor. That is, the Vernier reference describes processing (e.g., blending) a sequence of frames into a single (distorted) output image. The frames can be acquired by a camera (e.g., a web camera) (Vernier Para. [0015]). However, Appellant respectfully submits that in acquiring the frames, the Vernier reference does not appear to teach or suggest organizing the entire set of pixels of the image sensor (e.g., camera) into dynamic and static portions. That is, it appears that the Vernier reference reads-in a frame as-is, but then organizes the output image, which is composed from multiple frames blended together into a single image, into dynamic and static portions. As such, Appellant respectfully submits that the Vernier reference does not appear to teach or suggest organizing the entire set of pixels (e.g., of an image sensor to be read) into dynamic and static partitions, each partition having multiple pixels.

**b. The Lee and Vernier references do not teach or suggest the claimed limitation of “reading the static partitions once and the dynamic partitions multiple times and processing extra partition-read requests for creating a series of images corresponding in time to more frequently read partitions.”**

Page 28 of the Examiner’s Answer suggests that paragraphs [0019] – [0021], along with Figures 3-5 at 310 and 320 teach reading the static partitions once and the dynamic partitions multiple time and processing extra partition-read requests for creating a series of images corresponding in time to more frequently read partitions. Appellant respectfully disagrees.

Figures 3-5 at 310 and 320 indicate a dynamic portion 310 and a static portion 320 of an output image, not sets of pixels of an image sensor. The output image is being constructed, not read. Paragraphs [0019] – [0021] of the Vernier

reference appear to describe that a sequence of images 625 is acquired while the user moves in front of the camera (Vernier: Para. [0019], Figure 6 at 625). The multiple frames are stored in a frame buffer (Vernier: Figure 6 at 621). An artistic (e.g., distorted) output image is thereafter constructed in an image buffer by selecting pixels from the frames in the frame buffer (Vernier: Para. [0020]).

Appellant respectfully submits that in acquiring multiple frames, pixels corresponding to the static portion of the output image are actually read multiple times, since the Vernier reference appears to teach that multiple entire frames are initially acquired (Vernier: Para. [0019]). Pixels are then selected from the frames in the frame buffer, and stored in the image buffer to form a static portion (Vernier: Para. [0020]). The Vernier reference appears to teach that pixels forming the static portion of the output image are not modified “by stored pixels selected from subsequent frames.” As such, Appellant respectfully submits that the Vernier reference appears to teach not only reading pixels corresponding to a static portion of an output image in acquiring the multiple frames stored in the frame buffer, but also reading the stored pixels again by selecting them during construction of the output image from the stored multiple frames. Therefore, the static portion of the output image is not accomplished by only reading pixels of the static portion once, but rather by not modifying pixels initially stored in the output image buffer from one frame with pixels subsequently selected from the other multiple frames (Vernier: Para. [0020]). That is, the Vernier reference appears to teach storing the static portions once, instead of reading the static portions once, as claimed.

**c. There is no motivation to modify the teachings of the Lee reference with the Vernier reference.**

Page 28 of the Examiner’s Answer suggests that the one skilled in the art would have found it obvious to incorporate the teachings of the Vernier reference with the teachings of the Lee reference “to speed up and reduce costs and time required of the photography system by ignoring stationary portions of images after the initial image capture.” Appellant respectfully disagrees, and submits that doing so would destroy the intended functionality of the Lee reference.

The Vernier reference appears to teach acquiring a sequence of frames (e.g., images) including the portions corresponding to stationary portions of an output image (Vernier: Para. [0019] and Figure 6 at 625) over time, and blending portions of the multiple frames to artistically distort the output image (Vernier: Para. [0022]). That is, the Vernier reference appears to teach a method for distorting an image to achieve artistic effects. The Vernier reference does not appear to teach or suggest, and Appellant submits that one of ordinary skill in the art would not understand, the suggested modifications as those that might increase speed, reduce costs, or reduces time. To the contrary, the method taught by the Vernier reference likely has effects on speed, cost, and time opposite to those suggested as providing the motivation to combine the references. That is, acquiring a sequence of frames (e.g., entire pixel set), then blending the multiple images pixel-by-pixel into a composite output image would not be faster or cheaper than organizing an image sensor pixel set into static and dynamic partitions and only reading a static portion of an image sensor pixel set once.

Furthermore, nothing in the Lee reference suggests anything other than a method to faithfully capture an image by a sensor. Appellant respectfully submits that modifying the Lee reference with the image-warping teachings of the Vernier, as suggested by the final Office action, to produce a distorted image output, would destroy the likely intended image-producing functionality set forth in the Lee reference. As such, Appellant respectfully submits that one having ordinary skill in the art would not be motivated to modify the Lee reference with the teachings of the Vernier reference, except in an attempt to arrive at the claimed invention after its disclosure in the present application (e.g., improper application of hindsight)

#### **d. Conclusion**

In contrast with the teachings of the Lee and Vernier references, independent claim 1 is directed to a method of selectively reading less than all information available at an output of an image sensor for which member-pixels of a subset of an entire set of pixels are individually addressable, and presently recites:

sampling information, at the output of the image sensor,  
representing a targeted member-pixel of the subset without having to  
read information representing the entire set of pixels;



selectively reading information, at the output of the image sensor, representing at least one or more, but fewer than all member pixels, of the entire set based upon the sampling information without having to read information representing all pixels on the image sensor, wherein each pixel can be individually read, independently of other pixels;

accessing a first set of sampling photo-sensing pixels of the image sensor and accessing a second set of non-sampling pixels of the image sensor, wherein the first and the second set of pixels have different physical circuitry addressing and control lines going to them, respectively;

organizing the entire set of pixels into dynamic and static partitions, each partition having multiple pixels;

mapping one or more of the partitions to one or more of the member-pixels of the subset, respectively; and

reading the static partitions once and the dynamic partitions multiple times and processing extra partition-read requests for creating a series of images corresponding in time to more frequently read partitions.

Appellant respectfully submits that the Lee and Vernier references do not teach, suggest, or make obvious the respective claimed limitations of “organizing the entire set of pixels into dynamic and static partitions, each partition having multiple pixels” and “reading the static partitions once and the dynamic partitions multiple time and processing extra partition-read requests for creating a series of images corresponding in time to more frequently read partitions,” among others. In addition, one having ordinary skill in the art would not be motivated to modify the teachings of the Lee reference with the teachings of the Vernier reference, which distorts an output image to achieve an artistic result. Accordingly, Appellant respectfully requests reconsideration and withdrawal of the § 103 rejection of independent claim 1, as well as those claims that depend therefrom.

**2. Independent claim 13 is not obvious in view of the Lee and Vernier references.**

As set forth above with respect to independent claim 1, Appellant respectfully submits that the Lee and Vernier references do not teach, suggest, or make obvious the respective claimed limitations of “organizing the entire set of pixels into dynamic and static partitions, each partition having multiple pixels” and “reading the static partitions once,” among others. In addition, one having ordinary skill in the art would not be motivated to modify the teachings of the Lee reference with the teachings of the Vernier reference, which distorts an output image to achieve an artistic result.

In contrast, independent claim 13 is directed to a method of selectively reading data available at an output of an image sensor, and presently recites:

reading less than all data available at the output of the image sensor for which selected ones but not all of the entire set of pixels are individually addressable, wherein each pixel can be individually read, independently of other pixels;

accessing a first set of sampling photo-sensing pixels of the image sensor and accessing a second set of non-sampling pixels of the image sensor, wherein the first and the second set of pixels have different physical circuitry addressing and control lines going to them, respectively;

organizing the entire set of pixels into dynamic and static partitions, each partition having multiple pixels;

mapping one or more of the partitions one or more of the member-pixels of the subset, respectively; and

reading the static partitions once and the dynamic partitions multiple times and processing extra partition-read requests for creating a series of images corresponding in time to more frequently read partitions.

Accordingly, Appellant respectfully requests reconsideration and withdrawal of the § 103 rejection of independent claim 13, as well as those claims that depend therefrom.

**3. Independent claim 24 is not obvious in view of the Lee and Vernier references.**

As set forth above with respect to independent claim 1, Appellant respectfully submits that the Lee and Vernier references do not teach, suggest, or make obvious the respective claimed limitations of “organizing the entire set of pixels into dynamic and static partitions, each partition having multiple pixels” and “reading the static partitions once,” among others. In addition, one having ordinary skill in the art would not be motivated to modify the teachings of the Lee reference with the teachings of the Vernier reference, which distorts an output image to achieve an artistic result.

In contrast, independent claim 24 is directed to a digital camera, including a processor operable to:

- obtain sampling information from a targeted member-pixel of the subset without having to read information from the entire set of pixels; and

- selectively obtain information from another one or more but fewer than all member pixels of the entire set based upon the sampling information without having to read all of the pixels on the image sensor, wherein each pixel can be individually read, independently of other pixels;

- organize the entire set of pixels into dynamic and static partitions, each partition having multiple pixels;

- map one or more of the partitions one or more of the member-pixels of the subset, respectively; and

- read the static partitions once and the dynamic partitions multiple times and process extra partition-read requests for creating a series of images corresponding in time to more frequently read partitions.

Accordingly, Appellant respectfully requests reconsideration and withdrawal of the § 103 rejection of independent claim 24, as well as those claims that depend therefrom.

**4. Independent claim 27 is not obvious in view of the Lee and Vernier references.**

As set forth above with respect to independent claim 1, Appellant respectfully submits that the Lee and Vernier references do not teach, suggest, or make obvious the respective claimed limitations of “organizing the entire set of pixels into dynamic and static partitions, each partition having multiple pixels” and “reading the static partitions once,” among others. In addition, one having ordinary skill in the art would not be motivated to modify the teachings of the Lee reference with the teachings of the Vernier reference, which distorts an output image to achieve an artistic result.

In contrast, independent claim 27 is directed to a digital camera, including a processor operable to:

- obtain sampling data from a sampling pixel without having to obtain information from the other pixels in the corresponding partition, and

- selectively obtain data from at least the entire corresponding partition but fewer than all of the partitions depending upon the sampled-data without having to obtain information from all of the pixels on the image sensor, wherein each pixel can be individually read, independently of other pixels;

- access a first set of sampling photo-sensing pixels of the image sensor and access a second set of non-sampling pixels of the image sensor, wherein the first and the second set of pixels have different physical circuitry addressing and control lines going to them, respectively; and

- organize the entire set of pixels into dynamic and static partitions, each partition having multiple pixels;

- map one or more of the partitions one or more of the member-pixels of the subset, respectively; and

- read the static partitions once and the dynamic partitions multiple times and process extra partition-read requests for creating a series of images corresponding in time to more frequently read partitions.

Accordingly, Appellant respectfully requests reconsideration and withdrawal of the § 103 rejection of independent claim 27, as well as those claims that depend therefrom.

**B. Response to arguments in Examiner's Answer regarding the rejections under 35 USC § 103 of claims 3 -9, 14-20, 23, and 26 in view of the Lee, Vernier, and Yoneyama references.**

With respect to dependent claims 3-9, 14-20, 23, and 26, these claims depend directly or indirectly from one of independent claims 1, 13, or 24, which are believed to be allowable for the reasons set forth above with respect to each independent claim. These dependent claims include all of the limitations of the respective base claim and any intervening claims, and recite additional features which further distinguish these claims from the Lee and Vernier references.

As detailed above with respect to independent claim 1, Appellant respectfully submits that the Lee and Vernier references do not teach, suggest, or make obvious the respective claimed limitations of “organizing the entire set of pixels into dynamic and static partitions, each partition having multiple pixels” and “reading the static partitions once,” among others. In addition, one having ordinary skill in the art would not be motivated to modify the teachings of the Lee reference with the teachings of the Vernier reference, which distorts an output image to achieve an artistic result.

Pages 13-22 and 29 of the Examiner's Answer suggests the Yoneyama reference is cited for teaching the various additional claimed features over features claimed in the respective independent claims. However, from Appellant's review, the Yoneyama reference does not appear to cure the deficiencies in the Lee and Vernier references discussed above with respect to independent claim 1. That is, the Lee, Vernier, and Yoneyama references, either alone or in combination, do not appear to teach or suggest the respective claimed limitations of “organizing the entire set of pixels into dynamic and static partitions, each partition having multiple pixels” and “reading the static partitions once,” among others. Nor does the Yoneyama reference cure the lack of motivation to initially modify the Lee reference with the Vernier reference, since the result produces a distorted output image.

Pages 29-30 of the Examiner's Answer appears to only reiterate the suggestion that the Vernier reference teaches organizing the entire set of pixels into dynamic and static partitions in response to the remarks contained in Appellant's Appeal Brief. As discussed in detail above with respect to independent claim 1, the Vernier reference appears to organize the pixels of an output image into dynamic and static portions, not pixels of an image sensor that is subsequently read. The Vernier reference appears to acquire (e.g., read) the multiple frames without regard to dynamic or static pixel organizations.

Therefore, Appellant respectfully submits that the Lee, Vernier, and Yoneyama references do not teach or suggest each and every element and claimed limitation. As such, the claimed invention is not taught by, suggested by, nor made obvious in view of the Lee, Vernier, and Yoneyama references. Accordingly, Appellant respectfully requests reconsideration and withdrawal of the § 103 rejection of claims 3-9, 14-20, 23, and 26, respectively depending from one of independent claims 1, 13, or 24.

**C. Response to arguments in Examiner's Answer regarding the rejections under 35 USC § 103 of claims 10 and 11 in view of the Lee, Vernier, and Horie references.**

With respect to dependent claims 10 and 11, these claims depend directly or indirectly from independent claim 1, which is believed to be allowable for the reasons set forth above with respect to independent claim 1. These dependent claims include all of the limitations of the base claim and any intervening claims, and recite additional features which further distinguish these claims from the Lee and Vernier references.

As detailed above with respect to independent claim 1, Appellant respectfully submits that the Lee and Vernier references do not teach, suggest, or make obvious the respective claimed limitations of "organizing the entire set of pixels into dynamic and static partitions, each partition having multiple pixels" and "reading the static partitions once," among others. In addition, one having ordinary skill in the art would not be motivated to modify the teachings of the Lee reference

with the teachings of the Vernier reference, which distorts an output image to achieve an artistic result.

Pages 22-23 of the Examiner's Answer suggests the Horie reference is cited for teaching the various additional claimed features added to the features claimed in independent claim 1. However, from Appellant's review, the Horie reference does not appear to cure the features missing from the Lee and Vernier references discussed above with respect to independent claim 1. That is, the Lee, Vernier, and Horie references, either alone or in combination, do not appear to teach or suggest the respective claimed limitations of "organizing the entire set of pixels into dynamic and static partitions, each partition having multiple pixels" and "reading the static partitions once," among others. Nor does the Horie reference cure the lack of motivation to initially modify the Lee reference with the Vernier reference, since the result produces a distorted output image.

Pages 30-31 of the Examiner's Answer appears to only reiterate the suggestion that the Vernier reference teaches organizing the entire set of pixels into dynamic and static partitions in response to the remarks contained in Appellant's Appeal Brief. As discussed in detail above with respect to independent claim 1, the Vernier reference appears to organize the pixels of an output image into dynamic and static portions, not pixels of an image sensor that is subsequently read. The Vernier reference appears to acquire (e.g., read) the multiple frames without regard to dynamic or static pixel organizations.

Therefore, Appellant respectfully submits that the Lee, Vernier, and Horie references do not teach or suggest each and every element and claimed limitation. As such, the claimed invention is not taught by, suggested by, nor made obvious in view of the Lee, Vernier, and Horie references. Accordingly, Appellant respectfully requests reconsideration and withdrawal of the § 103 rejection of claims 10 and 11, respectively depending from independent claim 1.

**D. Response to arguments in Examiner's Answer regarding the rejections under 35 USC § 103 of claims 21 and 22 in view of the Lee, Vernier, and Horie references.**

With respect to dependent claims 21 and 22, these claims depend directly or indirectly from independent claim 13, which is believed to be allowable for the reasons set forth above. These dependent claims include all of the limitations of the base claim and any intervening claims, and recite additional features which further distinguish these claims from the Lee and Vernier references.

As detailed above with respect to independent claim 13, Appellant respectfully submits that the Lee and Vernier references do not teach, suggest, or make obvious the respective claimed limitations of “organizing the entire set of pixels into dynamic and static partitions, each partition having multiple pixels” and “reading the static partitions once,” among others. In addition, one having ordinary skill in the art would not be motivated to modify the teachings of the Lee reference with the teachings of the Vernier reference, which distorts an output image to achieve an artistic result.

Pages 23-24 of the Examiner's Answer suggests the Yoneyama and Horie references are cited for teaching the various additional claimed features added to the features claimed in independent claim 13. However, from Appellant's review, the Yoneyama and Horie references do not appear to cure the features missing from the Lee and Vernier references discussed above with respect to independent claim 13. That is, the Lee, Vernier, Yoneyama, and Horie references, either alone or in combination, do not appear to teach or suggest the respective claimed limitations of “organizing the entire set of pixels into dynamic and static partitions, each partition having multiple pixels” and “reading the static partitions once,” among others. Nor do the Yoneyama and Horie references cure the lack of motivation to initially modify the Lee reference with the Vernier reference, since the result produces a distorted output image.

Pages 31-32 of the Examiner's Answer appears to only reiterate the suggestion that the Vernier reference teaches organizing the entire set of pixels into dynamic and static partitions in response to the remarks contained in Appellant's



Appeal Brief. As discussed in detail above with respect to independent claim 1, the Vernier reference appears to organize the pixels of an output image into dynamic and static portions, not pixels of an image sensor that is subsequently read. The Vernier reference appears to acquire (e.g., read) the multiple frames without regard to dynamic or static pixel organizations.

Therefore, Appellant respectfully submits that the Lee, Vernier, Yoneyama, and Horie references do not teach or suggest each and every element and claimed limitation. As such, the claimed invention is not taught by, suggested by, nor made obvious in view of the Lee, Vernier, Yoneyama, and Horie references. Accordingly, Appellant respectfully requests reconsideration and withdrawal of the § 103 rejection of claims 21 and 22, respectively depending from independent claim 13.

### CONCLUSION

Appellant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner and/or members of the Board are invited to telephone Appellant's attorney Daniel A. Dettlaff at (612) 236-0131 to facilitate this appeal.

At any time during the pendency of this application, please charge any additional fees or credit overpayment to the Deposit Account No. 08-2025.

**CERTIFICATE UNDER 37 C.F.R. §1.8:**

The undersigned hereby certifies that this correspondence is being electronically filed with the United States Patent Office on

April 20, 2010  
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